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June 21st to July 20th inclusive.

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Weaving, Braiding, Plaiting, Preparing for Weaving.—W. E. Gedge (com.), W. H. Beck (com.), O. Drey, J. Horrock, E. and S. Tweedale, W. R. Lake (com.), W. Atherton, W. S. Mackie, J. Broadhead, J. Clayton and T. Richmond, T. Singleton, T. F. and E. Burslem, H. J. Haddan.

Weighing, &c.—L. A. Groth (com.)

Wheels for Carriages &c.—W. H. Carmont, G. B. Lovedee, W. F. Lotz (com.)

Wheels for Machinery &c.—R. Geddes and C. Sword.

Winding Thread, &c.—J. and T. A. Boyd, J. and J. Horrocks.

Window Blinds and Sashes.—H. Otway, C. L. Seymour.

Windows.—J. Louis, W. Howitt.

Wire, &c.—J. P. Hooper.

Wood, &c.—C. D. Abel (com.), C. D. Ekman.

Yeast, &c.—J. Jensen (com.)

⁎ *The above List is prepared from the Patent Records by Mr. T. Morgan, Secretary of the Inventors' Patentright Association, Limited.*

Automatic Recording of Telephone Messages.—In a book on the application of the telephone and microphone to physiological and chemical uses, Dr. Boudet describes his method of automatic recording of telephone messages. To do this he removes the diaphragm of the Bell telephone, screws to the wood one end of a steel spring, the other end being opposite the pole of the magnet. To the free end he solders a small piece of soft iron, weighing one-tenth of a gramme. Attached to this piece, and in the prolongation of the axis of the spring, he fixes a light bamboo arm, ten centimetres long, and terminated by a needle of whalebone. In fact, the diaphragm is replaced by a movable armature resembling the interrupter of an induction coil. The tracings are made on smoked paper, and transferred to glass. There are some points of difference, as well as resemblance, which makes it probable that tracings of this kind may be deciphered, but the matter is in embryo yet.

Spontaneous Combustion of Dyed Goods and Yarn.—The heaviest loss that has occurred in 1880, within the line of mutual insurance, has again been caused by the spontaneous combustion of dyed cotton yarn of various colours; and while this particular fire opens some entirely new questions that are now under investigation, it gives us reason, says Mr. Edward Atkinson, President of the Boston Manufacturers' Insurance Company, to renew our warning against a danger which has been the cause of thirty per cent. of the losses that we have incurred since January 1, 1878, a period of two years and nine months. Blacks, browns, slates, and Turkey red goods, dyed with cutch, gambier, aniline, iron liquor, and chromic acid, appear to be most liable to oxidation, if rolled hot or warm from the dry cans or piled hot from the dyeing kettles. In almost all the premises insured by us, complete arrangements have been made for thoroughly cooling cloth and yarn as it comes from the cans or kettles, or special fire-proof apartments have been provided for storing rolls of cloth from the dry cans over night. Yet, within the first month, hot rolls of cloth have been found by one of our inspectors in one of our risks. This last fire discloses the fact that old yarn, some of it imported five years since, and some made two years since, that had been softened with a mixture or emulsion of olive oil and soda to prepare it for knitting, took fire spontaneously when stored in the attic of an old-fashioned mill, where the heat was doubtless excessive. Whether the combustion ensued from the emulsion or from the dyestuffs is the point now under investigation, but it is evident that care should be taken not to expose some of these colours to excessive heat, whether the goods are freshly dyed or old. The present indications are that the combustion in this case occurred from the oxidation of the dyes used in the black yarn, combined with the olive oil used in the emulsion, as we have succeeded in promoting spontaneous combustion with this colour, but not with any other of those that have been prepared for our trial, precisely like those stored in the attic of the mill burned.

Reviews.

LIGHTHOUSE CONSTRUCTION AND ILLUMINATION.

"Lighthouse Construction and Illumination." By Thomas Stevenson, F.R.S.E. (Spon.)

In a review of this work our contemporary, the *Athenæum*, makes the following remarks:—

It is now rather more than eighty years since Robert Stevenson became engineer of the Northern Lighthouse Board. At the time of the constitution of that Board, in 1786, for the 4,469 miles of the Scottish coast it was contemplated that four lighthouses should be erected "for the security of the navigation and the fisheries." In 1879, according to "A Description and List of the Lighthouses of the World," the Scottish lights numbered 114, the English 212, and the Irish 97, making a total of 459, over 9,392 nautical miles of coast. The third successive lighthouse on the Eddystone Rock was built by Smeaton in 1789. The reef on which it is situated lies about fourteen miles off the harbour of Plymouth, and is just covered by the sea at high water. The Bell Rock Lighthouse, built by Robert Stevenson in 1811, rises on the Inchcape or Bell Rock, lying twelve miles off the coast of Forfarshire, and fully exposed to the waves of the German Ocean, which scarcely left it dry at low water. The Skerryvore Lighthouse, which may be called the queen of the lighthouses of the world, was built by Alan Stevenson in 1843 on the Skerryvore Rock, which lies twelve miles off the island of Tyree, in Argyleshire. The tower, which is of granite, is 138 ft. high, and it contains a mass of 501,580 cubic feet of stone, or more than double that of the Bell Rock, and not much less than five times that of the Eddystone. The Dhu Heartach Lighthouse, 107 feet 6 inches high, on a hard trap rock, fourteen miles from the Isle of Mull, and the Chicken's Rock Lighthouse, 123 feet 4 inches high, on a rock one mile off the Calf of Man, were built by David and Thomas Stevenson in 1873 and 1874. An "Account of the Bell Rock Lighthouse," by R. Stevenson, was published in 1824; an "Account of the Skerryvore Lighthouse," by Alan Stevenson, was published in 1848; and a "Rudimentary Treatise on the History, Construction, and Illumination of Lighthouses," by the same author, in 1850. An "Account of the Dhu Heartach Lighthouse," by David Alan Stevenson, will be found in vol. xlvi. of the *Proceedings* of the Institution of Civil Engineers. Adding the title of the volume under review, we need cite no other works, physical or literary, in order to establish the truth of what we have said of this noble series of able servants of humanity.

Mr. Thomas Stevenson, the author of the work before us, was the designer, in 1842, of the marine dynamometer, an instrument for measuring and registering the force of the waves of the ocean. This he found to amount on the Bell Rock to 3,013 pounds per square foot in the maximum fury of the storm. At Skerryvore, during a heavy westerly gale on March 29th, 1845, the greatest result was recorded, being a force of 6,083 pounds, or nearly three tons to the square foot. This instrument also enabled the engineer to detect the important facts—1, that the greatest force of the waves is exerted at the level of high water, diminishing quickly above and below that level; 2, that the vertical or lifting force exerted by the waves (as on the under side of a projecting cornice) may be as much as eighty-six times greater than the horizontal force at the same level tending to overturn the wall, and, 3, that the force of the recoil, or the horizontal force of the back draught of the wave, may be as much as three times the direct force. It is when exposed to such forces that at Unst Lighthouse, in Shetland, a wall 5 feet high and 2 feet thick was thrown down, and a door was broken open by a wave at a height of 195 feet above the sea; and that at the Fastnet Rock, at a height of 36 to 40 feet above the base of the lighthouse tower, being an elevation of from 118 to 122 feet above the sea, the water rises in a solid mass, of sufficient density to shut out the daylight of the lee window on the third story. If it be the pride of the engineer to contend with such mighty natural forces, it is no less a triumph of his art to be able to express them in numeric value.

Of lighthouse construction Mr. Stevenson tells us but little, that little chiefly regarding the facts and principles which should regulate the design of these structures. Of lighthouse illumination, on the other hand, he supplies a clear, distinct, and comprehensive history, entering enough into the optical and mathematical laws of the case to furnish the lighthouse engineer with a hand book of great value, and to give to the general reader an admirable outline of a special branch of scientific progress. We have, however, to turn to other authorities for one part of this history—Mr. Stevenson has been modestly reticent as to the *quorum pars magna fui.* From the death of Augustin Fresnel, in 1826, down to 1849, the only dioptric lighthouse instruments were those which he had introduced, viz., 1, the annular lens; 2, the cylindric refractor; 3, the curved fixed light prisms, which parallelised the light in the vertical plane only; and, 4, the straight prisms, which parallelised the rays by refraction in the horizontal plane only. In 1836 Mr. Alan Stevenson adopted a first order refractor of a truly cylindric form, which he had made by Messrs. Cookson, of Newcastle. In 1849-50 Mr. Thomas Stevenson proposed (in the *Transactions* of the Scottish Royal Society of Arts) what he called the Holophotal system, for the solution of the problem of condensing the whole sphere of diverging rays into a single beam of parallel rays, without any unnecessary reflections or refractions. The light at the north harbour of Peterhead was the first in which, in 1849, all the rays were geometrically combined in a single beam, without unnecessary agents. The first holophotes were katadioptric, being partially aided by metallic reflectors. The final perfection of his system is the dioptric holophote with dioptric spherical mirror, in which the whole light is parallelised entirely by glass, metallic reflectors being wholly dispensed with in any part of the apparatus, and refraction and total reflection (within the glass prisms) substituted. His last step was the application of total reflection to revolving lights. The group revolving and flashing lights of Dr. Hopkinson, the group flashing gas light of Mr. Wigham, and the improved optical agents of Mr. J. S. Chance and of Prof. Swan are also described by Mr. Stevenson. We regret to find that this great authority is one with the Trinity House and the Board of Northern Lights in considering it not practically desirable to adopt the elegant proposal of Sir W. Thomson to make each lighthouse signal the initial letter or letters of its name by dot and dash eclipses on the Morse system.

The application of the electric light to lighthouses is primarily due to Faraday; and the first magneto-electric machine capable of generating a current fit for lighthouse purposes was made by Prof. Holmes in 1853, and tried by the Trinity House in 1857, under Faraday's advice. This light was first shown to the sailor in 1858. The Trinity House subsequently introduced the electric light at Dungeness in 1862, and at Souter Point in 1871. Mr. Varley in 1866, and Siemens and Wheatstone in 1867, discovered powerful electric currents could be generated without a permanent magnet; and Holmes constructed in 1869 for the Trinity House a dynamo-electric machine on this new principle, which produced a light estimated by

Prof. Tyndall and Mr. Douglass as equal to about 2,800 candles. The French introduced the electric light at Cape La Heve, in 1863, and at Cape Grisnez in 1869.

The great desideratum for a sea light is penetrative power. Permanence of lustre, of course, is taken for granted as essential. The observations on the South Foreland electric light, compared with the oil lights of the North Foreland, Calais, Dunkerque, and Ostend, are to the effect that the first reaches its geographical range seventy-five times out of a hundred, while the oil light only reaches that range twenty-nine times out of a hundred. Mr. Stevenson remarks that while these observations prove the superior power of the South Foreland electric light, they do not prove its superior specific penetrative power, as the amounts of light emitted from the towers vary. It has been argued by some engineers that the electric light is more subject to absorption by fog than is an oil or gas light of equal intensity, owing to the greater prevalence of the rays towards the red end of the spectrum in the one case, and of those towards the violet end in the other. It is, however, pretty certain that a far more powerful light can be obtained by electricity than by any other method. As to cost, the electric light is relatively expensive when produced in small quantities, relatively cheap in large. Thus the electric light at the Lizard is twenty-three times as powerful as the oil lamp at only double the cost. While, then, it is desirable that fresh experiments should be made on specific penetrative power, we entertain little doubt that electricity will be employed hereafter as the illuminating agent of the lighthouses of the world.

Mr. Stevenson's book is a contribution to the scientific library of signal and permanent value. One point strikes us as worthy of practical inquiry, and that is, considering how the wave runs up the shaft of a light tower to such an extraordinary height, whether it might not be advisable to produce a returning curve by a well-proportioned swell of the upper part of the shaft (without any flat projection), so as to throw over the ascending wave upon itself, and thus keep it from sending its spray over the lantern. When great height of tower is not required for optical purposes, we venture to think that this suggestion is worth consideration.

GAS LABORATORIES.

"The Gas Manager in the Laboratory." By A PRACTICAL STUDENT. Illustrated with woodcuts. First Edition. London: Published by Charles W. Hastings, 22, Buckingham-street. 1881.

THIS is a small work of much practical ability, and as the statements the author sets out in the preface are very illustrative of the book itself, we shall quote therefrom without reserve.

The advances lately made in the manufacture and supply of coal-gas call for a knowledge of chemistry on the part of the gas engineer. To chemistry he must look for guidance how to obtain complete combustion of fuel and utilisation of heat in his retort furnaces for the proper point at which to remove the tar, for the most profitable methods of purifying, for the solution of the "sulphur" question, and for the best means of working up his residuals.

The author is not unaware that there are a multitude of chemical text books already before the public, but so far as his observation has extended, it seems that while the skilled chemist, the class student, and the "scientific dabbler" are well provided for, the man who wishes in his spare time to acquire a practical knowledge of scientific facts with a view of applying the same to the more successful carrying out of his calling, has been "left out in the cold." Himself a practical gas manager of many years standing, he has endeavoured to supply this deficiency as far as gas engineers are concerned, to render "The Gas Manager in the Laboratory" a useful companion to the many excellent works on the experimental part of gas engineering already before the public, and, at the same time, a handy book of reference. An explanation of the usual terms, symbols, &c., used by chemists, and the practical details of manipulation have received special attention, and the tables will be found to comprise information like to be in frequent demand by those who engage in chemical experiments.

Though prepared specially for gas managers, it is hoped that the book may be useful to all who wish to attain, with as little expenditure of time as possible, a knowledge of the principal facts of chemistry, or to refresh their memories on the subject. The author has not deemed it advisable to venture beyond the elementary stage of the science.

The author desires to express his thanks to those gentlemen who have favoured him with suggestions respecting this work, and to Mr. J. Brown, F.C.S., for kindly examining the tables contained in it.

The "Practical Student' treats his readers to Remarks on Matter; Remarks on Force; Practical Hints; adding thereto, Recipes and Standards.

We cannot, perhaps, do better than give a specimen of the contents of the book, as thus:—

Carbonic Oxide.—This gas is very poisonous, so it must be prepared in a well-ventilated place, and care be taken that all the joints of the connections, &c., are sound. If CO_2 gas be passed over red-hot charcoal, carbonic oxide (CO) is formed. Supposing all the CO_2 to be converted into CO, which in practice is seldom the case, it is doubled in volume. It may be prepared by charging the wrought iron tube retort, previously described, about one-fourth full of finely powdered chalk, and filling up the remainder with finely powdered charcoal. Or it may be made by heating in the retort a mixture of equal parts of chalk and iron filings. In this case, CO_2 leaving CO is evolved, and the iron filings are rusted or oxidised as the one equivalent of the oxygen contained in the CO_2, leaving CO to pass off as gas. In either of these processes, if the gas is required free from CO_2, it should be passed through one or two wash bottles charged with caustic soda solution (soda-hydrate solution). This solution may be made by boiling common washing soda with lime, and filtering. If the solution is strong, it must be filtered through a plug of asbestos or tow, as it would attack and break the filter paper.

DEATH OF PROF. SAINTE-CLAIRE DEVILLE.

SCIENCE has recently sustained a heavy loss in the death of one who for the past thirty years has had few equals and no superior in the fields of mineral chemistry and of inorganic analysis.

Etienne Henri Sainte-Claire Deville was born March 18, 1818, in the island of St. Thomas, in the West Indies. At an early age he manifested an ardent passion for the study of chemistry, which at that time found in France so many of its most distinguished professors. His abilities were manifested so early that at the age of 26 he was commissioned to organise the Faculty of Science, newly created in Franche Comté, and to preside over it as its dean. Here he undertook the analysis of the waters of the Doubs and of the springs around the town of Besancon, and greatly improved the methods then known for water analysis. Shortly after, he succeeded in preparing nitric anhydride, which previously had been attempted in vain. Toluol was another of his discoveries. In his 33rd year he succeeded Balard in the chemical chair at the Ecole Normale Supérieure, at Paris. Here, his emoluments only reached the modest sum of 3,000 francs, chemistry in France, as well as in England, being supposed to be its own reward. His next researches related to the properties and the industrial preparation of aluminium—discoveries which attracted public attention throughout the world. He then turned his attention with signal success to the metallurgy of platinum, and its separation from its associated metals. His investigations on boron and silicon are also well worthy notice, and his production of sodium at a cheap price has placed a powerful reagent in the hands of chemists, and has led the way to valuable results both in the laboratory and in industrial establishments. His highest achievement, from a strictly scientific point of view, was the establishment of the laws of dissociation. Previously, decomposition was regarded as a simple phenomenon, effected and completed, in the case of every substance, at a fixed temperature. Deville showed that in some cases it is effected within certain limits of temperature, being arrested at a given heat by the equilibrium established between the decomposing body and its products of decomposition.

A most admirable characteristic of the deceased *savant* was his strict accuracy—an attribute all the more deserving of honour in a man of his ardent and impetuous temperament. Among his pupils may be counted not a few of the most meritorious among the younger French chemists, such as Debray, Troost, Hautefeuille, Grandeau, Gernez, and others.

M. Deville died on July 1st, at Boulogne-sur-Seine, and was buried on the 5th. His old friend, M. Pasteur, pronounced an eloquent and impressive *éloge* at the funeral. All honour to his memory, and may his experimental accuracy, which M. Pasteur aptly calls the "probity of the chemist," find abundant imitators.

HUGHES ON WORKING TRAFFIC OVER INCLINED PLANES ON RAILWAYS.

THIS invention consists of improved means or apparatus for working traffic over inclined planes and steep gradients on railways or tramways. One or more ropes or chains of steel or other suitable material are laid along the line and the ends fixed near the top and bottom of the incline or steep gradient to a screw anchor, coupling, drum, or other suitable fastening. Holders to be fixed on line for carrying and guiding the rope or ropes where necessary. On the locomotive engine is fixed a pulley or pulleys on one or more of the driving axles, or on an axle or axles fixed at the leading or trailing end of locomotive, and connected with a driving wheel or axle by cranks or gearing. When an engine and train arrives at the foot of the incline plain or steep gradient, the rope or ropes or chains are uncoupled from the fastenings and passed round the pulley or pulleys on the locomotive engine, or the rope, ropes, or chains passed under one pulley, over a second, and under a third pulley, and the ends of the rope or ropes or chains are then made fast to the screw anchor, coupling, or drum, and tightened up. The other end of the rope or ropes or chains being fast at the top of incline or steep gradient. The locomotive with train then proceeds up the gradient, and is able to apply its full tractive power through the adhesion of rope or ropes or chain or chains on pulley or pulleys. When the train reaches the top of incline or steep gradient the rope or ropes or chains will be uncoupled from anchor or other fastening, and taken off the pulley or pulleys on locomotive and recoupled to anchor fastening. When a train is descending a steep gradient the rope or ropes or chains can be used as a brake power with locomotive engine.

AN INVENTORS' CONGRESS.

Our contemporary the *Scientific American*, in a recent issue, places the following communication by Daniel Ruggles, of Fredericksburg, before its readers, and adds the valuable comments which follow it. To British inventors Mr. Ruggles' complaints seem almost as caseless as the repinings of a spoilt child. To us the American (U.S.) Patent Law seems little short of perfection. However, as such congresses as proposed might do good we wish it success.

The magnitude of the interests involved in our governmental patent system demands protection and the fostering care of the nation.

It extends to the whole field of our great and rapidly expanding industries—agricultural, commercial, manufacturing, mechanical, mining, chemical and mechanical philosophy, and the broad range of the scientific developments of the world's industries.

It calls in trumpet tones upon the host of toiling inventors to rally and to concentrate their mental force for the equitable protection of their rights.

It has become, apparently, expedient to convene an Inventors' Congress, at Washington or New York, on or about the 15th day of November next, to take such action as may be deemed advisable, in anticipation of the meeting of the national Congress.

Among the questions for consideration by the Inventors' Congress, the following may be entitled to some degree of prominence:

I. The reformation and equitable establishment of our patent system.

(1) The classification of patents in conformity with a stringent rule of discriminating charges, scaled according to relative importance and periods of continuance.

(2) Adjusting and limiting the revenues to the legitimate expenditures of the Patent Office.

The present accumulation of revenue on the operations of the inventive genius of citizens is abnormal to our doctrines and system of government, and oppressive to the indigent inventors.

II. The expediency of petitioning the Federal Congress to convert the Patent Office into an executive department of the national government.

The vast arena for the emulation and development of the inventive genius of our citizens would find a more expanded scope under an independent autonomy.

III. The question may be thus summarily considered as to the expediency of inviting the nationalities of the world to participate in an Inventors' Congress, at Paris, London, or Washington, to deliberate on the adoption of a plan for co-operation in the administration of the great interests involved in the field of invention.

In the trite adage that "necessity is the mother of invention" there is, doubtless, some truth, but it is capital and not necessity that profits by invention abroad, and very often at home!

The above noted interests involve a policy of national concern, inviting prompt consideration. About 243,000 inventions have authentic record, and have been already illustrated in the vast sphere of our national industries, imparting vigorous action evolved by inventive genius.

IV. The question is also presented as to the expediency of establishing a stock exchange for patented inventions at New York, as early as September ensuing, with branches at the great commercial centres at home and abroad, thus giving solvency to the productions of inventive genius among the world's industries.

V. It is respectfully suggested that inventors favoring these views organize in each State at the earliest practicable moment and select delegates to an Inventors' Congress, to meet on the 15th day of November 1881, on the ratio of two at large and one for each five hundred inventors for each State represented.

It is also suggested that the *Scientific American*—the publishers consenting—be made the organ for communication for the development of this subject.

Daniel Ruggles.

Fredericksburg, Va., June 25, 1881.

COMMENTS ON LETTER OF MR. DANIEL RUGGLES.

For nearly forty years the *Scientific American* has been an earnest advocate of inventors and inventors' rights. On every proper occasion it has set forth the just claims of inventors to popular appreciation, public honour, and that pecuniary reward which is secured by the legal recognition of their property rights under letters patent. If, therefore, it fails to sympathize with the movement which Mr. Ruggles proposes, its readers will understand that it is not for any lack of desire to advance in the fullest degree the lawful interests of the pioneers of material progress.

With all respect to our correspondent's judgment, we are compelled to take issue with the very first proposition he lays down, inasmuch as it implies that the interests of inventors have not hitherto enjoyed the "protection and fostering care of the nation."

The Patent Office has not always been administered as wisely as might be desired: our present legislation has been more or less defective from the first; our courts have not always been free from prejudice and error in adjudicating patent cases: nevertheless, our patent interests are and always have been under the fostering care and protection of the nation to a degree not attained or even aimed at in any other country. There is room for improvement, as there is in the administration of all human affairs; but that improvement is not likely to be furthered by denying to the nation the credit which is justly its due for its not unsuccessful efforts to encourage inventors and protect the rights of patentees.

The expediency of calling a convention of inventors, national or international, may safely be left to the decision of the vast and honourable body of men and women deserving the name. The probability of such a convention's accomplishing much, even if held, is, to say the most, very slight. Certainly Mr. Ruggles' call to reform the patent system without a more specific indication of what is to be changed, and in what way, and for what purpose, is not likely to be responded to with any great enthusiasm, except, perhaps, by certain associations, whose interests in the "amendment" (so-called) of the patent laws has thus far boded little good to inventors.

This is not the first time that a general convention of inventors has been proposed. That such propositions have never been put into execution is not surprising when we stop to consider how narrow is the basis of common interest on which inventors and patentees can come together, calling to mind at the same time the circumstance that the troubles of inventors arise quite as often from the opposition of other inventors as from that of the public at large.

As citizens it is easy for A, B, and C to unite in all heartiness in agreeing that the public good demands the fullest encouragement of invention. As inventors representing the three tenses of the verb "to invent"—past, present, and future—it is as easy for them to find themselves in an attitude of mutual hostility. A's invention is finished, patented, introduced, and is the basis of a profitable industry. What A specially wants of the patent laws is that they should protect his monopoly, make its duration as long as possible, and not encourage overmuch the effect of B and C to supplant him. B's invention is before the Patent Office for recognition. He has a horror of grasping monopolies. He feels it a moral duty to protect the public from the extortions of A. He would, therefore, have A's patent construed most rigorously, and the utmost latitude allowed to his own claims. If A or any other inventor has forestalled him in any particular he regards it as somehow a personal wrong, and is apt to blame the patent laws for discouraging invention or accuse the patent examiner of working in the interest of some "bloated monopolist." C is an inventor in the future tense. He wants to accomplish a certain end, and is provoked to find that A and B and possibly others have patented the very devices he wants to use. The interest which he has in common with them are apt to be overshadowed by those interests which conflict, certainly if he is at all inclined to be selfish.

In times past, when novel inventions were few, the inertia of popular habit and popular prejudice was the chief hindrance to the immediate success of new inventions. Now, improvement, progress, or whatever it may be called, is the rage; novelty is grasped at and fought over, and too often the inventor's worst opponents are those of the household of invention—his brother craftsmen.

It may be that a union of inventors would bring peace by arbitration; but we are inclined to think that such a union would have to be the product of much fighting.

The special ends which Mr. Ruggles would have the proposed convention work for do not, as a whole, impress us as altogether feasible or desirable. If the charges for letters patent were to be graded, as he proposes, according to the importance of the devices covered, there would at once arise the impossible task of deciding the relative merits of inventions, The natural tendency of inventors is to exaggerate the value of their inventions; the tendency of the officials of the Patent Office is the reverse; and it often happens that both fail to appreciate the real significance of particular inventions, the working value of which may not become fully apparent until years after the patent is granted. On the other hand, inventions which seem to be, and really are, of signal value when made, may be supplanted by better devices almost immediately, and so lapse into insignificance. Only omniscience and infinite impartiality in the Patent Office could keep the proposed discrimination from being an instrument of injustice to inventors and the source of immediate dissatisfaction to all. The suggested system of premiums and bounties to indigent inventors would be as impossible to carry out fairly, as it would be certain to open the door to corruption and scandal. Besides, the same determined effect which would secure to the deserving inventor financial assistance from a government office, would be much more likely to obtain the needed help at the hands of clear-sighted or speculative individuals. With our abundance of capital seeking opportunity for investment a promising invention need not suffer for lack of means for its development.

The proposition touching the establishment of a stock exchange for patented inventions is, in its present form, simply incomprehensible. The development of properties is in no way furthered by stock exchange operations, nor is their solvency; and we fail utterly to see how inventors could be benefited by the institution suggested—barring, of course, those of the Keely and Gamgee sort.

The propriety of adjusting the revenues of the Patent Office to its legitimate expenditures has been repeatedly urged by the *Scientific American*. On this point our agreement with Mr. Ruggles is complete,

We should be glad to see an international convention looking to a unification of the patent laws of all nations on the basis of the American system; but we see little reason to anticipate such progress on the part of foreign governments for many long years.

The Scientific Review

AND

SCIENTIFIC AND LITERARY REVIEW,

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President, SIR ANTONIO BRADY.

SESSION 1880—1881.

The Institute being out of Session, further meetings will not be held till next Session, commencing in November.

Subscriptions are payable to Mr. G. A. STRETTON, the Receiver, 4, St. Martin's-place, S.W., who is the proper official to give receipts.

F. W. CAMPIN, Sec.

Monthly Notices.

The Vienna Patent and Industrial Exhibition is, it seems, progressing favourably, an historical art department containing 700 oil paintings chronologically grouped with a large number of drawings and sketchings.

Influence of Magnetism on Chemical Phenomena.—An interesting field of inquiry is opened up by some experiments lately made by Professor Ira Remsen, of the John Hopkins University, in Baltimore. He desired to know whether the chemical behaviour of a metal is in any way influenced by magnetic action; and with this view placed a shallow vessel of thin iron, containing a solution of copper sulphate, over the poles of a strong permanent magnet. The copper was deposited in a fairly uniform way on the entire surface except at the lines marking the outlines of the poles. These lines were strongly marked at depressions in the deposit. The action was still more striking when an electro-magnet was used, instead of the permanent magnet. In a narrow space marking the outlines of the pole there was no deposit. Within this outline the deposit was fairly uniform, but outside of it the copper was deposited in irregular ridges running at right angles to the lines of force, and apparently coincident with the lines marking the equipotential surfaces. The largast circles Professor Remsen obtained were nearly four inches in diameter. The nature of the phenomena is not well understood as yet, though the effects are obviously due to influence of the magnetism on the iron plate, or on the liquid, or on both together.

Trade Marks.—An influential international character attaches to the movement for procuring the adoption of a common definition of Trade Marks by all the mercantile countries of the world. There is something illusory in making Trade Mark treaties and then refusing to protect, in England, for example, a sign which may be a perfectly good and valid Trade Mark in France. Negotiation is the only method possible of obtaining an international agreement. Whether the negotiation be initiated by the Foreign Office, or conducted through the Foreign Office by the Board of Trade, depends more upon the persons for the moment at the head of affairs in the departments than on any general considerations. Mr. Chamberlain has shown in the Bankruptcy Bill the will to assist the mercantile community; and the adoption by all important nations of the rules and the revised rules for avoiding collisions at sea, which were originally drawn up by the Board of Trade, has justly been referred to as an encouraging precedent.

Asbestos in the Black Hills.—Among the new discoveries made within the past few months is a large body of asbestos. This was discovered by Mr. T. B. Leavenworth, about six miles from Deadwood City. The croppings can be traced for nearly three hundred feet, while a large body of it has already been unearthed. Tests have been made which prove that this body of asbestos is equal to any yet discovered in America. It may be that this mineral will not come into immediate use, adds the *Pioneer*, but the day is not far distant when it will become an article of export from the hills.

Detection of Fire-damp.—M. T. Coquillon some time since published an account of an instrument for this purpose. A spiral of platinum or palladium is made hot by an electric current, and this by catalytic power produces the combination of the mixed gases. A modification of this lamp has been employed to produce the slow combustion of fire-damp. Platinized asbestos is used as wicks for a lamp fed by some hydro-carbon; by this flame a layer of platinum wire gauze is heated to red heat, and it is kept glowing by consuming any fire-damp which may be in the atmosphere. It is stated that one lamp with five burners will consume in a day 4,000 cubic metres of an explosive mixture of gases. In Caroline Colliery, near Langendreer, in Westphalia, where some experiments have been tried, nine cubic metres of explosive gases were consumed by one lamp in seven minutes.

New Remedy for Baldness.—In cases of confirmed baldness the new remedy proposed is to remove the scalp, bit by bit, and substitute, by skin grafting, pieces of healthy scalp, taken from the heads of young persons. The success which has heretofore attended operations of this nature in cases of scalp wounds gives a promising outlook for this new mode of curing baldness; and perhaps the day is not far distant when the shining plates of our venerable fathers will bloom with the flowing locks of youth.

THE SCIENTIFIC REVIEW
AND
Scientific and Literary Review
INCORPORATING THE "JOURNAL OF THE INVENTORS' INSTITUTE."

AUGUST, 1881.

NEW HOME OF TECHNICAL EDUCATION.

"Great is Diana of the Ephesians" was the exultant cry over the successful development of the grand art-glory of old Ephesus. With slight alteration, but with like meaning and intent, have the plaudits of Albertopolis been made known to the world.

Since the days that Old King Cole, who was then little by little developing his majestic powers by the aid of the sun-light of Albert the Good, South Kensington has grown and grown, swelled and swelled, and absorbed into uselessness more and more of good and true work. Placed far, far away from the habitations of the real sons of toil, to whom it would cost half a day's journey to get there, it nevertheless was close to the aristocratic districts of the metropolis; hence could readily be utilised as a splendid Raree show, and Cole, the able potentate, alert and fully equipped, has taken care that as far as Court influence and push, push, pushing goes, the capital of the new schools of Art and Science which depend so much upon advertisement and puffery, shall be centred at South Kensington—*Sic volo sic jubeo*—King Cole is all powerful, and has now to add to his triumphs that movement which has been so long talked of as the important question of the day—Technical Education. A grand central institution has been established in the Cole country, by the aid of Lord Selborne, L.C., and a certain Civil Engineer known to fame as an eminent engineer for law cases, sometimes for upholding and sometimes for destroying them as professional duty may serve, and of course with scrupulous regard for truth and justice, namely, F. J. Bramwell, F.R.S., &c., who, as we understood, received from her Majesty the honour of Knighthood.

Although all this parade has gone on at Albertopolis, the money and energy has been gotten from the City of London, and the real name of the undertaking is the City and Guilds of London Institute, and the building, so says *The Times*, will be of red brick and red terra-cotta, an adaptation of modern materials to the *Queen Anne style*.

At a public display some short time since, the Lord Chancellor, as being a great authority in Technical Education or for some other reason, made a speech to the Prince of Wales, who, it appears, has consented to become President of the Institute, and the Lord Chancellor, who is a deadly opponent of the Patent Laws or property rights for Inventors, had the hardihood to observe that the aim of this institution will be to supplement the teaching of the technical schools already started—schools giving instruction in the practical application of science and art to the trades and industries of the country, and by cultivating and endeavouring to stimulate *inventive genius*. It is therefore hoped and anticipated that the sister institutions, representing pure and applied science, will work in harmony with each other, forming an alliance, the effect of which will be to raise the intellectual *status* and to improve the technical knowledge and practical skill of the working classes of this country, and so to increase its industrial prosperity.

But after all the best, most proper, and pleasantest utterance of the Lord Chancellor was when he stated that Mr. Bramwell was to be knighted. Now that we have such pleasant relations established, Inventors must look out for specious plans of Patent reform.

THE PATENT LAW.

It will be seen by reference to the newspapers, that the Right Hon. J. Chamberlain stated in the House of Commons, on 2nd August, in Committee on Supply, that during the Parliamentary recess, he would go into the Patent Law question, in order to bring in a Bill based on the remarks he had made on the second reading of Mr. Anderson's Bill.

Proceedings of Societies.

ROYAL SOCIETY.

JUNE 16.—The President in the chair.—The following papers were read: "On the Differences in the Physiological Effects produced by the Poisons of certain Species of Indian Venomous Snakes," by Dr. Wall,—"On Pendent Drops," by Mr. A. M. Worthington,—"On the Effect of Electrical Stimulation of the Frog's Heart, and its Modification by Cold, Heat, and the Action of Drugs," and "On the Action of Ammonia and its Salts and of Hydrocyanic Acid upon Muscle and Nerve," by Drs. Brunton and Cash,—"Postscript to the Chronological Summary of Methods of computing Logarithms in his Paper on the Potential Radix," by Mr. A. J. Ellis,—"Note on the Spectrum of Carbonic Acid," by Mr. C. Wesendonck, "On the Wave of Translation, and the Work it does as the Carrier Wave of Sound," by Mr. J. Scott Russell,—"On Stratified Discharges, No. VI. Shadows of Striæ; No. VII. Mutiple Radiations from the Negative Terminal," by Messrs. W. Spottiswoode and J. F. Moulton,—"Note on the Existence in the King-crab (*Limulus polyphemus*) of Stigmata corresponding to the Respiratory Stigmata of the Pulmonate Arachnida, and on the Morphological Agreements between Limulus and Scorpio," by Prof. Lankester.—"On the Influence of Coal Dust in Colliery Explosions," No. III., by Mr. W. Galloway,—"Effects of Stress on the Thermo-electric Quality of Metals," Part I., by Prof, J. A. Ewing,—"On the reversal of the Lines of Metallic Vapours, No. VIII. Iron, Titanium, Chromium, and Aluminium," by Profs. Liveing and Dewar, —"Note on a Comparison of the Diurnal Ranges of Magnetic Declination at Toronto and Kew," by Mr. B. Stewart,—"On the Absorption of Gases by Solids," by Mr. J. B. Hannay,—"The Relation of the White Blood Corpuscles to the Coagulation of the Blood," by Mr. L. C. Wooldridge.—"A new Line of Research bearing on the Physiology of Sugar in the Animal System," by Dr. Pavy,—"The Molecular Volume of Solids," by Mr. E. Wilson,—"On the Stresses caused in the Interior of the Earth by the Weight of Continents and Mountains," by Mr. G. H. Darwin,—"On the Refraction of Electricity," by Mr. A. Tribe, —"Note on the Spectrum of Sodium," by Capt. Abney,—"On the State of Matter," by Mr. J. B. Hannay,—"Formulæ for Sn_8U, Cn_2U, Dn_8U in Terms of SnU," by Mr. E. H. Glaisher,—"On Riccati's Equation and its Transformations, and on some Definite Integrals which satisfy Them," by Mr. J. W. L. Glaisher,—"The Effects of certain Modifying Influences on the Latent Period of Muscle Contractions," by Drs. Yeo and Cash,—"On the Absorption of Gas by the Intestines and the Action of Carminatives upon It," and "On the Action of Alkali and Acid on Muscle: Frog and Rabbit," by Drs. Brunton and Cash,—"On a new Form of Febrile Disease associated with the Presence of an Organism distributed with Milk from the Oldmill Reformatory School, Aberdeen," by Prof. J. C. Ewart,—"On certain Definite Integrals," No. IX., by Mr. W. H. L. Russell,—and "Sur la Surface de l'Onde et Thèoremes relatifs aux Lignes de Courbure des Surfaces du Second Ordre," by M. A. Mannheim.—The Society adjourned over the long vacation.

SOCIETY OF ANTIQUARIES.

JUNE 16.—A. W. Franks, Esq., V.P., in the chair.—Mr. J. W. Comerford presented, in the name of his late father, Mr. J. Comerford, a bronze processional cross and a bronze figure from a crucifix. The former had been dug up on Bosworth Field, and is figured in Nichols's "Leicestershire," vol. iv. p. 91, It is of a type not uncommon in England at the end of the fifteenth century, and closely resembles one exhibited to the Society by Mr. J. C. Robinson. A peculiar feature in this example was a hinged metal ring round the neck of the baft, which closes with a snap, and was probably intended to fix a cloth or fringe round the pole or staff of the cross, after the fashion of a halberd. The figure from a crucifix bore traces of anamel in one eye and on the tunic. It was found on piercing an arch, thirty years ago, in Withybrook Church, Warwickshire. Mr. J. R. R. Godfrey exhibited a drawing of a coffer now in Shanklin Church, and bearing the name of Thomas Silkested, who was Prior of St. Swithin's, Winchester, from 1498 to 1524. The date on the chest was 1512. Only the front of the chest was old. The inscription ran, DOMPNVS THOMAS SILKSTED PRIOR ANNO DNI 1512. In the centre were the initials T. S., and the arms of the see of Winchaster.—Mr. P. Morgan exhibited a drawing of a portion of a Roman pavement found at Caerwent; also an old knife washed up by the Usk near Abergavenny. Mr. J. A. Sparvel-Bayly presented rubbings of two brasses at Laindon Church. The inscriptions and lobels were lost, but Mr. Sparvel-Bayly had little doubt the brasses commemorated respectively John Kekilpeny, rector, who died in 1466, and Richard Bladwell, rector, who died in 1513.—Mr. H. Laver communicated an account of a Roman altar found at Colchester in some sewerage excavations. The inscription runs as follows:—

MATRIBVS
SVLEVIS
SIMILIS . ATTI . F
CI . CANT .
V . L . S

Such at least is the reading adopted by Mr. Roach Smith, who interprets it thus: "Similis, the son of Attus, to the mothers, the Sulevæ—he belongs to the Civitas of the Cantii (Kent)—willingly discharges his vow."—Mr. Leveson Gower exhibited two quarries of glass, each bearing the Gresham crest, a grasshopper. The nose of one was pierced with the letter I, and that of the other with the letter M.—Mr. J. H. Middleton exhibited a silver-gilt dish, formerly in the Demidoff Collection, with the "Adoration of the Shepherds" in *repoussé* work, date seventeenth century. Mr. Middleton also communicated an account of a Roman villa recently excavated at Fifehead Neville, Dorset, together with drawings of a tesselated pavement and other antiquities found on the spot. Both the pavements, of which drawings were exhibited this evening, viz,, that from Caerwent and that from Dorsetshire, contained representations of fishes.

STATISTICAL SOCIETY.

JUNE 21.—J. Caird, Esq., President, in the chair.—The following were elected Fellows: Mr. R. K. Causton, Right Hon. the Earl of Lytton, Rev. Canon D. J. Mackay, and the Right Hon. the Earl of Jersey.—Mr. Hyde Clarke read a paper "On the English Stations in the Hill Regions of India; their Value and Importance, with some Statistics of their Products and Trade." Mr. Clarke, who was Honorary Agent for Darjeeling, and for the Planters of Western India, described the English and neighbouring States in the temperate regions of the Himalayas to the north, and the stations in the Neilgherries of Southern India.—An interesting discussion followed, in which Sir W. R. Robinson, the Rev. J. Long, Dr. H. M. Macpherson, Mr. J. Danvers, Mr. Saunders, Dr. T. G. Balfour, Mr. M. G. Mulhall, Dr. Guy, and the President took part.

LINNEAN SOCIETY.

JUNE 16.—Sir J. Lubbock, Bart., F.R.S., President, in the chair.—Mr. A. Somerville, Capt. J. T. Wright, and Mr. J. Forrest, the Australian explorer, were elected Fellows.—Mr. W. H. Fitch exhibited drawings of orchids, species of Odontoglossum.—The Rev. W. Higgins showed a Holothurian (*Psolus squamatus*) got between the Falklands and Patagonia, originally figured by Otho F. Muller in his "Zoologia Danica," and now recorded of wide distribution.—A letter was read from Mr. W. Ferguson, of Colombo, mentioning his having found *Wolffia arrhiza*, Wimm., in abundance, and his discovery of *Adiantum æthiopicum*, L., in the Kandyan country, both plants being new to Ceylon.—Mr. J. G. Baker exhibited a specimen of the inflorescence of *Aloe Paryii*, which had flowered for the first time in this country, although the drug obtained from the plant had been known for two thousand years.—Surgeon-Major Aitchison then read a communication "On the Flora of the Kuram Valley, Afghanistan," Part II. He showed by a map the peculiarities of the vegetation of the district, and in illustration of his paper referred to a series of dried specimens of the plants and the products in use by the natives and otherwise, characteristically interesting.—The next paper read was "On Central African Plants collected by Major Serpa Pinto," by Prof. Count Ficalho and W. P. Hiern. The specimens herein discussed were collected by Major Serpa Pinto in the month of August, 1878, along the upper course of the river Ninda, an affluent of the Zambezi, on the west side of the high plateau. As regards the climate of this locality, the temperature is described as variable; the weather as very dry during seven or eight months of the year and very wet during two or three months. The nature of the soil is metamorphic argillaceous schist; the latitude is 14° 16′ S., the longitude 20° 56′ E., and the elevation 1,143 metres above the ocean. The rest of the botanical collections made by Major Serpa Pinto at different points of the journey, which were much more considerable, were lost. The present little collection consists of seventy-two numbers, comprising sixty-five species in thirty-nine genera; twelve of these species are new or not previously described and published, and at least one new genus appears amongst them. Some of the specimens are too imperfect for final determination, and several of the grasses and sedges can only be generally inferred to their approximate position and not specifically ascertained. In the case of the previously known species, the affinities of many of the species are not only with the Flora of Huilla, in South Angola, but also in several instances with that of extra-tropical South Africa; only a few of the species are widely distributed in the tropics of this and other continents.—Then followed a paper by Mr. E. Miers, viz., "Revision of the Idoteidæ, a Family of Sessile-eyed Crustacea," and another by Prof. Ewart, "On the Nostrils of the Cormorant." Certain structural peculiarities in the latter were described, these apparently accounting for, or being related to a certain extent with, the habit of the bird of flying with its mouth open.

CHEMICAL SOCIETY.

JULY 16.—Prof. Roscoe, President, in the chair.—The following papers were read: "On the Isomeric Acids obtained from Coumarin and the Ethers of Salicylic Aldehyde," by Mr, W. H. Perkin. The author has studied the action of various agents on these bodies. The α body (from coumarin) is converted into the β body by heat or light. In general the effect of chemical action on the α acid is to convert it into the same compound as that yielded by the β body. Bromine forms an exception, and two isomeric dibromides were obtained. The author concludes that as the α body has a lower boiling point, density, refractive index, and is less stable than the β acid, it is probable that its molecules are further apart, and that the difference of distance is probably between the radical and the hydroxyl. The derivatives from propionic and butyric coumarin were studied.—"Notes on Napthalene Derivative," by Messrs. H. E. Armstrong and G. Lowe.—"On the Synthesis of Ammonia," by Mr. G. S. Johnson. —"On the Alkaloids of Nux Vomica," by Mr. W. A. Shenstone.—"Notes on Photographs of the Ultra-Violet Emission Spectra of certain Elements," by Mr. W. N. Hartley. —"On the Sulphates of Aluminium," by Mr. S. U. Pickering.—"On Two New Oxides of Bismuth," by Mr. M. M. P. Muir, Bi_2O_7 and Bi_4O_7, prepared by the action of aqueous potassium cyanide on a hot nitric acid solution of bismuth nitrate.—The Society then adjourned over the summer recess.

MICROSCOPICAL SOCIETY.

JUNE 8.—Prof. P. M. Duncan, President, in the chair—Eleven new Fellows were elected and proposed.—Prof. P. Reinsch attended the meeting, and exhibited specimens of the vegetable forms found by him in the coal measures.—The President read a paper "On some Remarkable Enlargements of the Axial Canal in Sponge Spicula, and their causes, accompanied by drawings on the blackboard. Nearly all the spicula obtained from specimens of very deep soundings off Japan were found to have the normal axial canal enlarged in a moniliform or conoidal manner, producing very elegant results. The spicula were of seven or eight kinds, and were mature. The enlargement was found to be invariably accompanied by an open condition of the axial canal, or by penetrations, cylindrical in outline, from without, down to the canal. The penetrations were shown to be connected with an organic body resembling the zoospores of an Achlya; and granules, organic in nature, were observed within the enlarged canals. Thinning and solution of the spicula, the result of these organisms, were considered, and, admitting the influence of great pressure, the President stated that he had never seen anything which led him to believe that there was free carbonic acid gas in the ocean.—A note was read by Dr. Savage, calling attention to the changes which took place in nervous tissues in the process of hardening.—Mr. Holmes read a paper on a new British Alga, specimens of which were exhibited.—Discussions also took place on the value of swinging sub-stages and on the motion of diatoms. Dr. Maddox exhibited some micro-photographs of diatoms.

METEOROLOGICAL SOCIETY.

JUNE 15.—Mr. G. J. Symons, President, in the chair.—Messrs. F. Crowley, A.M. Davis, F. H. D. Eyre, W. M. Gibson, E. W Mathew. J. Parnell, S. J. Rigby, T. G. Rylands, H. Smith, A. H. Wood, and the Rev. R. Drake were elected Fellows.—The following papers were read: "On the Use of Synchronous Meteorological Charts for Determining Mean Values over the Ocean," by Mr. C. Harding.—"On the Climate of Fiji," by Mr. R. L. Holmes. This paper gives the result of meteorological observations taken at Delanasau, Bua, Vanua Levu, during the ten years 1871-80.—"Note on the Formation of Hail," by Mr. J. A. B. Oliver.—"Note on a Comparison of Maximum and Minimum Temperature and Rainfall observed on Table Mountain and at the Royal Observatory, Cape Town, During January and February, 1881," by Mr. J. G. Gamble.—Mr. E. J. Spitta exhibited and described a new mercurial maximum and minimum registering thermometer.

HISTORICAL SOCIETY.

June 16.—Lord Aberdare, President, in the chair.—The following papers were read: "The Struggle of Civilization from the Era of the Crusades to the Fall of the East (1453)," by the Rev. Prebendary Irons, D.D. —"The Life and Character of President Lincoln," by the Hon. I. N. Arnold.—and "Historical Review of the Characters of Archbishop Cranmer and Francis Bacon, Lord Verulam," by Mr. G. A. Ainslie.

JUNE 17.—Lord Aberdare, President, in the chair.—At a special meeting of the Society, Major-General Sir F. S. Roberts, Bart., was presented with a diploma of Honorary Fellowship.

FOLK-LORE SOCIETY.

JUNE 22.—Annual Meeting.—Lord Beauchamp, President, in the chair.—The Hon. Secretary, Mr. G. L. Gomme, being unfortunately absent in consequence of illness, Mr. H. B. Wheatley read the annual report. The report shows that there are members of the Society in Denmark, France, Germany, Italy, Portugal, Sweden, Turkey, China, Japan, India, Africa, Canada, United States, and Australia. From these facts the Council justly hope to be able to do the best for the study of folk-lore. MSS. have already been received from Prof. D. Comparetti, of Florence, Prof. Z. C. Pedroso, of Lisbon, and Lieut. C. Temple, in India, on the folklore of their respective countries; and it will be the earnest endeavour of the Council to print these as soon as possible. Dr. Dennys, of Singapore, and the Rev. H. Friend have also promised assistance on Chinese folk-lore, and Miss Frere has promised to lay before the Council a scheme for the collection of South African folk-lore. Perhaps the most important feature of the meeting was the report of the Proverbs Committee. This committee was appointed by a resolution passed at the annual meeting 1880, and it seem to have made some considerable progress on the question of dealing with the proverbs of Great Britain. The report sets forth the main facts with reference to the proverbs of Britain as follows:—1. That existing printed collections are neither scientifically arranged nor possess scientifically arranged indexes; 2. That there exist in the hands of local collectors many very valuable proverbs which have not yet been printed: 3. That the work of collecting proverbs might still be vigorously pushed with a considerable amount of success. Under each of these headings the committee recommend some portion of work to be done. In the first place they suggest the republication of the earliest printed collections of proverbs by Camden, Howell, and others, but so rearranged as to be on the basis adopted in the great Russian collection printed by Snegiref in 1834, and in the German dictionary of proverbs printed by Wander. In 1834 Snegiref issued in four volumes his "Classification of Russian Proverbs." The heads of this classification are:—Book I. Introduction: I. On the foreign sources of Russian proverbs; 2. On the relation of Russian proverbs to Russian philology. Book II. Anthropological: proverbs relating to the moral and physical causes of differences between nations; proverbs relating to heathenism, faith, superstition; manners and customs in proverbs; ethical. Book III. Political, Judicial; legislation; laws; crimes and punishments; judicial ceremonies. Book IV. Physical Proverbs; *a*, meteorological, astrological; *b*, rural; *c*, medicinal. Historical Proverbs; *a*, chronological; *h*, topographical; *c*, ethnographic; *d*, personal; e, mottoes. The reissue of English early printed proverbs in the form suggested above would answer all the purpose of an introductory manual of English proverbs. Under the second heading the committee have the gratification of reporting the acquisition of a MS. collection of some two thousand Scotch proverbs, besides the offer of some collections by the Rev. Canon Hume, Miss Courtenay, and others. All these will be utilized by the Society. Under the third heading the committee recommend the issue of a complete handbook of folk-lore by the Society, in which the claims of proverbs may be duly set forth for the use of collectors. Another interesting feature in the report is the promise of a bibliographical list of articles on folk-lore contributed to periodical literature, and we suppose that but for Mr. Gomme's indisposition Appendix B to the report would have contained the first sample.—Mr. M. D. Conway seconded the adoption of the report, and among other speakers were Messrs. Thoms, Nutt, Udal, Tolhurst, and Hill.

ARISTOTELIAN SOCIETY.

MAY 2.—S. H. Hodgson, Esq., President, in the chair.—Dr. J. Burns-Gibson read a paper "On the Practical Significance of Hegel," endeavouring to show that Comte's empirical human synthesis is included and finds its truth in the Hegelian ideal human synthesis, which is another name for the endless becoming of God in and for and through humanity, and has for ground God as he eternally is in himself, from the beginning perfect. A lengthy discussion followed.

JUNE 20.—S. H. Hodgson, Esq., President, in the chair.—Mr. S. Fenton read a paper "On Schopenhauer and Hartmann," which was followed by a discussion.

SOCIETY FOR THE PROMOTION OF HELLENIC STUDIES.

JUNE 16.—Annual Meeting.—Prof. C. T. Newton, V.P., in the chair.—The Honorary Secretary read a report on the progress of the Society since January 22, 1880, when the present Council were elected.—This being adopted, the President, Vice-Presidents, Council, and Auditors, for the ensuing year were duly nominated and elected.—The following additional Vice-Presidents were elected, viz., Prof. W. D. Geddes and Prof. R. Y. Tyrrell.—Nine Councillors having retired, in accordance with the rules of the Society, the following were elected in their places, the numbers of the Council being at the same time raised from forty-two to forty-six: Mr. S. H. Butcher, Prof. A. Goodwin, Rev. E. L. Hicks, Mr. H. Jackson, Mr. A. Lang, Mr. J. Peile, Rev. E. S. Roberts, Mr. J. E. Sandys, Mr. A. Sidgwick. Dr. W. Smith, and Rev. W. Wayte.—In moving a vote of thanks to the auditors, Messrs. F. Pollock and D. Freshfield, Prof. Gardner pointed out that besides the increase of funds two things were needed to enable the Society to carry out fully the objects proposed, firstly, constant attention and activity on the part of the Council, and secondly, time for the development of fit opportunities. In the end it might be hoped that the Society would aid effectually all who wished to study Hellenic antiquities whether at home or abroad. The Chairman then expressed his regret at the inevitable absence of the Bishop of Durham, the President of the Society, and stated that, as no address was forthcoming on the general progress of Greek archæology in the past year, Prof. Gardner would read parts of Dr. Schliemann's paper on his discoveries at Orchomenus, which was to appear in the second volume of the *Journal of Hellenic Studies*. He thought that the combined interest in Dr. Schliemann's proceedings and in Orchomenus itself was sufficient justification for delaying the April number of the Journal in order to include this paper.—Prof. Gardner having read the paper and made some comments upon it, which were supplemented by Mr. Percival and the Chairman, an archaic gold earring was exhibited which was supposed to have come from Athens, and also a coloured plate, representing an unpublished Greek vase of the best period, on which are depicted the labours of Hercules, and which is in the British Museum. This plate, with a description by Mr. C. Smith, will appear in the Society's Journal.

RECENT AMERICAN AND FOREIGN INVENTIONS.

Runner Spindle.—Mr. Herman W. Vitt, of Union, Mo,, has patented an improved device for communicating motion from the spindle to the stone, the construction being such as to allow the runner to run true, though the spindle may be out of tram or sprung.

Oyster Dredges.—Mr. C. O. Dougherty, of Crisfield, Md., has patented an improved windlass for oyster dredges, by which, in case of accident or when it is desired to allow the dredge line to pay out rapidly, the machinery may be quickly thrown out of gear, and the spool on which the dredge line is wound be allowed to revolve freely on the shaft.

Steam Boilers.—Mr. Charles H. Kuhne, of Butler, Pa., has patented an apparatus for regulating the supply of water to steam boilers, by which the water is prevented from falling too low and rising too high in the boiler, thereby avoiding the danger and damage incurred by an excess or scarcity of water. The invention consists in a chamber connected with the boiler, and containing a float that moves a steam cock, combined with a feed water chamber, and a steam cylinder containing a piston, connected with the valve in the water chamber in such manner that the rise and fall of the float permits or cuts off the flow of water to the boiler as required.

Canal Locks.—Mr. Horace Harding, of Tuscaloosa, Ala, has patented an automatic lock that is adapted for use not only upon canals, but also upon rivers, where wide gates are required for passing tows, rafts, and large vessels, and where, in case of submergence from freshets, it is desirable that there shall be no levers or other lock fixtures exposed above the walls to damage from drift or floating ice.

Propeller. — Mr. Charles W. Rich, of Whitehall, N. Y., has patented a propeller. The object of this invention is to facilitate the application of steam power to canal boats and other vessels, and to adapt the propelling apparatus for use in deep water and in shallow water.

An Improvement in Gas Engines has been patented by Mr. Charles J. B. Gaume, of Brooklyn, N. Y. The object of this invention is to simplify the construction of gas engines, and to utilise the power produced by the explosion of the mixture of gas and air to greater advantage.

Tanning.—In the ordinary process of tanning leather the hides are thrown into the vats that contain the tanning liquor, and as the stronger and sour liquor in the vat settles to the bottom the hides have frequently to be handled and moved about, that they may all of them, and all parts of them, be equally exposed to the action of the liquor. Mr. Charles Flohr, of Canistoe, N.Y., has patented a combined tan vat and stirrer, the object of which is to avoid the labour and cost of this customary handling of the hides, and to agitate the liquor and expose the hide to the action thereof in such a manner that the tanning process shall be more speedy and the hides more evenly tanned.

Improved Wind Motor. — This motor, lately patented by Manuel de la Torre, of the City of Mexico, Mexico, consists of a wheel provided with curved vanes rotating on a vertical axle in a cylindrical hood, which is closed on two opposite sides and opened on two intervening sides, so that the wind entering the wheel at one side escapes at the other side. The frame is revolved or adjusted to the wind by two vanes fixed on its top, one of which is adjustable and may be moved to regulate the supply of wind to the wheel. The supporting frame of the device consists of a base, upright post, and horizontal cross pieces, which unite above the centre of the base. The vertical shaft turns in a step at the bottom, and is journaled at its upper end in the cross pieces of the main frame. The turbine wheel is composed to two similar disks secured to the shaft at a suitable distance apart to receive between them four curved vanes. The inner edge of each of these vanes is fixed on a point about half way between the center and circumference of the two disks, and its outer edge reaches to the circumference of the disks. The cylindrical hood, closed on opposite sides by curved quadrantal plates, is supported on a vertical pivot, that is fixed centrally in a step or top of the cross pieces or timbers of the main frame, and it is also supported by means of anti-friction rolls, which run on an annular track attached to the under surface of the top of the cylindrical frame. On the top of the cylindrical hood there are two horizontal vanes, one of which is fixed and the other stationary, while the latter is laterally movable through a quarter of a circle. These vanes, under the influence of the wind, control the movement or adjustment of the cylindrical hood, turning the frame so that the wind is admitted at one side of the wheel and escapes at the opposite side in a greater or lesser degree, according to the pressure or force of the wind. The cylindrical hood is held perpendicularly and revoles easily on anti-friction rolls fixed on the top of its cross pieces of the main frame, and projecting up against a circular track under the top of the cylindrical frame. Rolls that project laterally from the lower part of the uprights against a ring on the inner surface of the cylindrical frame near the bottom support it against lateral pressure. This motor is compact and effective, and is not so liable to damage from storms as windmills of the usual pattern. M. De la Torre, the inventor and patentee, is for the present at the Continental Hotel, Broadway, and 21st street, New York city.

Street Refuse.—Mr. Howard Newlin, of Brooklyn, N.Y., has patented a machine for treating street refuse or sweepings, or for the separation therefrom of materials having value. The machine is also adapted for use in separating garbage and ashes, coal and coal dust, and the cleaning and separation of coffee, rice, and other grains. It consists in a combination of endless travelling belts, screens, blowers, and washing tanks, forming the complete machine, whereby the material is separated and washed, and further separated by specific gravity, if required; also, in separating screens and water tanks of novel construction.

An Improved Fish-plate for use on railroads, whereby the ends of the rails will be securely held and the transverse strain upon the holding bolts entirely avoided, has been patented by Mr. George H. Waring, of Indiantown, New Brunswick, Canada. The invention consists of a fish-plate having around its bolt holes projecting thimbles or bosses, whose length is equal to half the thickness of a rail web, so that when two plates are applied to opposite sides of a rail the thimbles entering the corresponding holes in the web will meet in the centre.

An Improved Toe Weight, to be attached to horses' hoofs, which is so constructed to fit any style of horseshoe and does not injure the hoof, has been patented by Mr. Charles Drew. of St. Lewis, Mo. The invention consists of a weight provided with a longitudinal threaded perforation which receives a threaded pin that is clamped to the horseshoe by means of clips catching in opposite edges of the shoe and held together by a screw.

An Improvement in Snap Hooks has been patented by Mr. Edward Davidson, of West Dedham, Mass. The invention consists in making a snap hook with the loop on the same side as the hook, folding the end of the strap within it and securing said strap by a screw.

An Improved Fruit Drier has been patented by Mr. George S. Grier, of Milford, Del. The invention relates to improvements upon the fruit drier patented by the same inventor, October 28, 1879, in which a vertical series of trays were used, each of which was supported upon pawls attached to four vertically sliding posts, and the whole raised or lowered and sustained one above the other, while heated air passes up through the open bottom of the same.

Wire Stretcher.—Mr. Martin A. Howell, jr., of Chicago, Ill., has patented an improved wire stretcher for either plain or barbed wire, whereby one person with an ordinary lever or wooden handspike is enabled to draw to its proper position any barbed or plain wire, all injury and danger of breakage from kinks, short bends, curls, or abrasions of the wire being avoided.

Padlock.—Mr. Frank W. Mix, of Terryville, Conn., has patented an indicator padlock, in which a change is made in the indicator wheel, and a different set of symbols, figures, or letters made to show through openings in the case, for the purpose of enabling the proper authorities to detect any surreptitious opening of the lock.

Felted Yarn.—Heretofore the machines for making felted yarns have been constructed with a taut cloth or linen sheet, upon which the yarns were felted, but it was impossible to give this sheet the desired tension. The operation was very inconvenient and the yarns were stretched, thereby separating the filaments, which is just the reverse of that which is to be obtained by felting the yarns. Mr. Louis Bourau, of Paris, France, has patented a yarn-felting machine which is simple in construction, will felt the yarns without tension, and complete the felting in a single operation.

Centering the Blocks from which bobbins and quills are formed, has been patented by Mr. Jerome B. Fellows, of Fryeburg, Me. The invention consists of forked block supporting posts actuated by suitable mechanism to present the block to the lathe centers, and then fall out of the way to permit the turning of the block.

An Improved Gauge for Bracelets has been patented by Mr. Willis H. Howes, of New York city. The object of this invention is to readily ascertain the exact size and form of bracelet required to fit any particular wrist. The invention consists in a gauge for bracelets that can be readily contracted and expanded to fit a wrist, and thus give the exact form and size of bracelet required to fit the wrist.

An Improved Dynamo-electric Machine which is adapted for use for various purposes, and particularly for electro-plating and analogous arts, has been patented by Mr. Hans J. Müller, of New York city. The invention is an improvement in the class of machines in which a series of armature coils are attached to a shaft rotated by power suitably applied, so that they rotate between fixed and opposing field magnets, and thereby generate the current. The invention consists in combining a relay and a resistance with a series of rotating armatures and fixed field magnets, whereby the reverse or secondary current (originating in the bath of plating solution) is caused to pass through the magnets in the same direction as the main current. The relay regulates the permanent charge of the machine.

A Bracelet, combining strength and flexibility, capable of easy adjustment to the arm, and incapable of becoming accidentally unclasped, has been patented by Messrs. Leon P. Jeanne, of New York city, and Paul Peanne, of Greenville, N.J. The bracelet is made of a narrow thin strip of metal wound closely and spirally about a chain and provided with a novel device for adjusting and fastening the bracelet.

An Improved Hame Loop has been patented by Mr. Alpheus Arter, of New Lisbon, Ohio. The object of this invention is to furnish a convenient means for adjusting the strap by which two hames are connected together at the top.

A Valise has been patented by Mr. Mahlon Loomis, of Washington, D.C. The object of this invention is to provide for use of travellers an improved form of valise which shall not only be adapted for containing apparel, toilet articles, &c., like an ordinary valise or travelling bag, but also for suspension vertically from the back of a car seat or other support within folding panels or shelves, may be lowered for use in taking lunch, or playing games, &c.

An Improved Wheat Steamer and Drier has been patented by Mr. Cyrus T. Hanna, of Pittsburg, Pa. The invention relates to a process and apparatus for steaming and heating grain and feeding it to the grinding stones hot, so that it may be ground while hot, so that a better article of flour may be produced.

A Dynamo-electric Machine has been patented by Mr. Hans J. Müller, of New York city. The object of this invention is to provide a new and improved dynamo-electric machine, which is so constructed that a series of separate and independent currents can be produced, of which one is used to excite the field magnets and at the same time perform work in the external circuits, while the other currents perform work in the external circuits only.

A *telegraph operator* at a railroad station is responsible for the switches, and is required to telegraph the approach of trains. Besides this he has frequently to answer inquiries from other stations as to whether certain trains are approaching, and usually attends to the ordinary telegraph business. To watch the track he must frequently leave his table, especially if the track is curved, so that his work is not only interrupted, but there is more or less risk of its being improperly done. Mr. Sydney L. Palmer, of Serena, Ill., has patented an arrangement of reflecting mirrors, which convey to the operator's table a picture of the track extending in both directions from the station.

Training horses for trotting, toe weights are attached to their shoes to cause the horses to throw out the fore feet and make longer strides, but after a little service the weights in common use become loose and are with difficulty tightened on the shoe spur or clip. To avoid this difficulty, Mr. Peter Broadbooks, of Batavia, N. Y., has patented an adjustable toe weight that can be securely held in place.

An *improved earring fastener*, patented by Mr. Geo. Krementz, of Newark, N. J., consists in a forked spring sliding in a circularly-bent tube, and having an ear wire projecting from one end of the bent tube attached to one shank, the other shank being provided with a catch for locking the spring and the ear wire.

An *improved gate*, which can be conveniently opened from a vehicle, has been patented by Mr. Henry Salisbury, of Newburg, N. Y. The gate consists of a series of horizontal rails or slats pivoted to end uprights, the inner one of which is hinged to a post, and has a beam pivoted to its upper end, the outer end of which beam is connected with the outer end of the gate by a pivoted rod, and the inner end of this beam is provided with a weighted roller and suitable stops, so that when a rope is pulled the latches will be raised, the inner end of the beam will be raised, and the weighted pulley will roll to the end of the beam, thereby raising the outer end of the gate, which can be swung open by pulling on the rope.

Wood treating composition.—Mr. Henry W. Mattick, of Lawrenceburg, Ind., has patented a composition for filling the pores of wood, consisting of gum shellac cut in alcohol, kauri gum, spirits of turpentine, drying oil, raw linseed oil, and red lead.

An *improved bail fastener*, patented by Mr. John A. Marston, of Centre Sandwich, N. H., consists in combining with a splint basket and bail a metallic strip clasped about the bail, and having both ends then passed between two splints and bent divergently over them.

An *improved corset* has been patented by Imogene E. Banker, of Brooklyn, N. Y. The object of this invention is to furnish corsets that will give proper shape and can be worn without discomfort, and to dispense with paddings and other devices used to give form to ill-shaped persons.

Neckties and scarfs, as usually worn, are pinned to the collar, so as to be retained in place. Mr. Meyer Hellman, of New York city, has patented an improved device, which is a substitute for pins for accomplishing the same object, and has the additional advantage of being more convenient in use, always at hand, and allowing adjustment after the collar and neckwear are put on the person.

A *head rest*, which can be folded compactly for transportation, and can be erected in a short time, has been patented by Mr. Heinrich Strauss, of Nüremberg, Germany. The head rest is formed of a sheet or piece of fabric attached to a frame, which is so constructed that the sheet is held inclined, and its tension can be regulated at will.

An *improved tool* for handling, opening, closing, and scraping boxes, barrels, bales, &c., has been patented by Mr. William H. Bickelhaupt, of New York city. The invention consists in a hook attached to a transverse handle, with a hammer head at one end and a claw at the other end, the hook being provided with a scraping knife projecting in the opposite direction of the hook.

An *improvement in end gates* for wagons has been patented by Mr. Matthew F. Allen, of Nashville, Tenn. The object of this invention is to facilitate removing the end gate of wagons for the purpose of discharging the load without removing either of the body rods. It consists in an end gate provided at one end with a sliding piece pressed outward by suitable springs, and provided with a hasp or handle, by means of which it can be withdrawn from between two cleats of the side of the wagon, so that the end gate is shortened sufficiently to be withdrawn from between the sides of the wagon.

An *improvement in sewing machines* has been patented by Messrs. William G. Wilson, George S. Darling, and Henry Wulff, of Chicago, Ill., assignors to Wilson Sewing Machine Company, of same place. The improvement relates to sewing machines of the class using oscillating shuttles; and it consists in certain novel features of construction that cannot be clearly described without engravings.

An *improved mechanical movement* has been patented by Mr. Joseph Harris, jun., of Boston, Mass. This invention is an improvement upon the machine for changing a reciprocating into a rotary motion, described in letters patent numbered 7,902, which were granted to the same inventor January 14, 1851.

An *improved spindle and bolster*, in which the spindle is firmly supported, and, with its attached whirl, can be conveniently detached from the bolster when required, has been patented by Messrs. Joseph Duffy and Henry Whorwell, of Paterson, N. J. The spindle is constructed with oil chambers that facilitate the lubrication of the spindle bearings.

An *improved machine for revolving cans* in solder has been patented by Mr. David Klump, of Moorestown, N. J. The invention consists in a ring provided with set screws for securing it to a fire pot, and also provided with a slotted arm having the base plate of a perforated upright secured to it adjustably by a set screw, a standard secured adjustably in the perforated upright by a set screw, and having an adjustable collar clamped to its upper end, and a cylinder secured in the said collar and carrying a rotary shaft having arms attached to its forward end, and held forward by a spiral spring, so that the can will be revolved by rotating the shaft.

A *glove fastener*, which is durable and effective, and does not tear the glove, has been patented by Mr. Joseph Whitby, of Yeovil, County of Somerset, England. The invention consists in a hollow stud containing a spring which projects through slots in the sides of the stud and catches on a shoulder of an eyelet as the stud is passed through or into the eyelet, thus locking the two together, the eyelet and stud being fastened to the opposite lapels of the glove.

An *improvement in stoves* has been patented by Mr. William Clark, of Troy, N. Y. The object of this invention is to improve the construction of the stoves for which Letters Patent No. 122,156 were issued to the same inventor December 26, 1871, to adapt it for burning bituminous coal, and to allow the ashes to be more effectually shaken out of the fire box. The invention consists in constructing the fire box with offsets in the upper parts of its sides, and the case with openings provided with dampers in the upper parts of its sides through which air can be admitted to the upper part of the fire box, to adapt the stove to burn bituminous coal.

An *improved vehicle wheel* has been patented by Messrs. Charles W. Ball and Thomas Davis, of Macon, Ill. The invention consists in combining with the spokes of a wheel, a tire and metallic felly, forming a T-bar, and spoke sockets arranged on both sides of the felly, whereby strength and durability are secured to the wheel.

An *improved gate latch* has been patented by Mr. Albert L. Grayson, of Rutherfordton, N. C. It consists of a wire or rod of iron bent into a square loop, one end of the rod being extended to pass through the gate and having a knob or other means of turning or swinging the loop for unlocking the gate secured to it, the loop being adapted to catch over a triangular projection or keeper secured to the gate post.

A *fireplace* which will cause complete, or nearly complete, combustion of the gases and smoke produced by the burning fuel, and at the same time radiate the heat in a downward direction to heat the lower stratum of air, has been patented by Mr. Gerard R. Ricketts, of Quaker Bottom, O. The invention consists in an inclined radiator having current or gas arresters or reflectors on its front face, one of which may have a suitable draught passage.

Mops.—Mr. William Taylor, of Chicago, Ill., has patented a device by which mops may be easily and conveniently wrung. The invention consists, principally, of two metal skeleton frames hinged together, each carrying a roller, one of the frames being curved to fit the bottom and the edge of the bucket or tub.

An *improved millstone sharpener* has been patented by Mr. Patrick Graham, of Stockholm, Sweden. The invention consists of one or more toothed disks mounted upon or forming part of a radial arm connected with the driving spindle, to adapt the sharpener to break or sharpen the grinding surface of a millstone by being moved over the surface under pressure.

A *cultivator* which shall be adapted for cultivating different kinds of grain, and for use upon stony or stumpy ground, has been patented by Mr. Clinton Mendenhall, of Martinsburg, W. Va. The invention consists in a wheeled frame having lugs and inclines on its forward end, and a system of levers and shafts, by means of which the plows may be lifted out of the ground.

Root plough.—Mr. Francis B. Snodgrass, of Harrisville, W. Va., has patented an improved root-cutting plow, so constructed as to rise and pass over obstructions that cannot be cut, and which will allow the colter to be adjusted and reversed.

An *improved friction brake* has been patented by Mr. Abraham O. Frick, of Waynesborough, Par. This invention relates to improvements upon that form of friction brake in which two segmental sections or shoes are made to bear against the opposite sides of the periphery of a wheel to arrest the movement of the latter.

Windmill.—Mr. Napoleon Prince, of St. Boniface, Manitoba, Canada, has patented a windmill, so constructed that it can be adjusted to run at any desired speed and in either direction, which will adjust itself, as the force of the wind varies, so as to run at a uniform speed. It can be readily thrown out of the wind and can be instantly stopped.

Fire-escape.—Messrs. John A. Moore and James W. Brown, of Woodville, Tenn., have patented a fire-escape which can be converted into a door shutter, window blind, or ladder at will; it consists of a hinged frame from which the lazy-tongs are suspended, and within which they may be closed up by suitable devices to form a blind or shutter, said fire-escape frame being hinged to a door or window frame so as to swing outward and inward, ofter the manner of an ordinary blind or shutter.

Thrashing Machine Sieve.—Mr. Millard F. Lemonnier, of Ida Grove, Iowa, has patented a sieve for thrashing machines so constructed as to cause the air blast from the fan blower to act more effectively to clean the grain than sieves constructed in the ordinary manner. It consists of a board three-fourths of an inch in thickness, having holes from three-eighths to four-eighths of an inch in diameter formed through it, and having inclined grooves formed in its lower side at the sides of the holes toward the fan blower, by which the air blast is guided into and deflected through the holes.

An *improvement in shirts* has been patented by Mr. Julius Herzog, of New York city. The invention consists in a chest-protecting shield combined with a dress shirt, as a permanent portion thereof, and in a manner not to interfere with the work of starching and ironing the shirt bosom, and also to allow of unequal shrinkage of the material.

A *portable wire stock fence*, suitable for temporarily inclosing large tracts of land in grazing districts, where it is often necessary to remove cattle from one pasture to another, has been patented by Mr. Charles S. Giger, of Highland, Ill. The improvement consists in a removable fence support of novel and peculiar construction, adapted for holding the barbed wires of a stock fence in position.

Holding a hame tug and trace together so as to prevent the buckle connecting the two from becoming disengaged, has been patented by Mr. Gerhard Freese, of Bloomington, Ill. It consists in a metal loop of quadrangular shape, slightly tapering or contracted at one end, and provided with lugs of peculiar arrangement on the inner sides for wedging and holding the tug.

An *improved sack* or flexible receptacle for cotton, wool, and other substances, has been patented by Mr. Milledge B. Wever, of Johnston's Depot, S. C. The sack is attached to and envelops a jointed extensible frame that may be so adjusted as to distend it and support it in upright position, thus enabling it to be filled quickly and easily.

An *improved stalk and weed roller and cutter* has been patented by Mr. Henry H. Spencer, of Mound City, Ill. This machine is so constructed that the knives are at rest or have no reciprocating movement until, in the revolution of the cylinder, they arrive underneath the axle, when they are made, by cam-and-gear mechanism, to make a quick stroke, thus instantly severing the stalks or weeds upon which the whole weight of the machine is at that moment imposed. The knives are instantly retracted after such stroke by means of springs suitably arranged for the purpose.

An *improved tracheotome* has been patented by Mr. Lewis J. Lyman, of Manhattan, Kan. The improvement relates to surgical instruments for use in opening the trachea in cases of membranous croup, or in any case when it is necessary to practice tracheotomy. The object of this invention is to provide for more easily effecting an entrance to the trachea than can be done by instruments heretofore in use, and for retaining the instrument in proper place after insertion. The invention consists in a blade of peculiar shape upon a spring arm fitted between two spring-holding arms that are formed with T-ends, and also in a catch for simultaneously securing and loosening the spring-arms.

Washing Machine.—Mr. Charles W. Posten, of Boone, Iowa, has patented an improved washing machine, which consists of a circular vessel formed of two cones united at their bases, and is provided with a shaft attached to the apex of each cone, and resting on suitable bearings in the sides of a tub or tank adapted to receive it. The double conical vessel has numerous perforations and indentations all over its surface.

An *amusing toy bank* for children has been patented by Mr. John Murray, of New York city. The invention consists in the combination, with the head that forms the body of the bank, of the tongue and the inclined and weighted pivoted bar carrying the tongue, whereby the weight of a penny placed upon the tongue will turn the pivoted bar and cause the tongue to pass into the head and drop the penny into the interior of the head.

An *improved sash holder*, patented by Mr. John H. Lynch, of Lowell, Mass., consists in a roller wheel pivoted in journals sliding horizontally in the lugs of a plate attached to the outer surface of one of the side rails of a sash, which wheel is pressed against the pulley stile of the window frame by a spring, and is provided on one of its sides with a ring of ratchet teeth, which engage with like teeth of a peripherically ratcheted wheel loosely mounted on the shaft of the rubber wheel, which ratchet wheel is acted upon by a spring pawl, that permits both the ratchet wheel and rubber wheel to rotate when the sash is being raised, but locks the ratchet wheel and the rubber wheel as soon as the sash is released, and thus holds it in place; but if force is exerted the rubber wheel is disengaged from the ratchet wheel and the rubber wheel can rotate, thus permitting the sash to descend.

An *improved device for drying fruit* and vegetables and evaporating liquids has been patented by Mr. John A. Warner, of Furnaceville, N. Y. The invention consists of two upright fixed cylinders placed concentrically one within the other, the outer cylinder having rollers fixed on its inner face in such a position as to form a disconnected spiral track for the outer ends of the evaporating trays, and the inner cylinder being provided around its outer face with a continuous spiral for the inner ends of the evaporating trays.

An *improvement in magnets for separating iron clips* patented by Mr. George E. Bowers, of Fitchburg, Mass., consists of a magnet having a straight core and helices wound in opposite directions inclosed in a tube or hollow cylinder that is attached to one pole of the magnet, and also provided with a switch, whereby the direction of the current around a portion of the magnet can be reversed, so as to demagnetise the core and cylinder and thereby release the clips.

An *improvement in storing compressed* air or other gas in vessels has been patented by Mr. Alexander James, of Edinburgh, Scotland. The invention relates more particularly to a method and means for storing compressed air for motive power for locomotives or cars for railroads. The invention consists in a method of compressing air within the adhesive attraction of an absorbent material or materials is made to assist in reducing the volumes of gaseous bodies in confined spaces or inclosures.

An *improved stove leg* has been patented by Mr. William F. Fenerty, of Louisville, Ky. This invention consists in casting the lower edge of the stove with a downwardly-inclined flange having undercut projections on the inside thereof, in combination with the leg cast with a surrounding shoulder to support the weight of the stove, and with an upwardly-inclined shank the side ends of which are beveled to correspond with the undercut projections, forming a dovetail therewith, the leg being also provided with a central stud for locking the leg to the flange of the stove.

An *improved life-preserver* has been patented by Mr. John Thompson, of Victoria, British Columbia, Canada. The invention consists of a series of floats so hinged to a belt that is to be fastened around the body that when not in use the floats hang perpendicularly from the belt, and when the device is in use the floats extend radially and at right angles from the belt and lock themselves in position.

For Improving the Appearance of Furs.—Mr. Lucinius Havasy, of New York city, has patented attaching the tips or outer ends of feathers to the fur in such a manner that these feather tips will appear between the hairs of the fur, and will produce various effects, according to the position in which the fur is held.

Artificial Stone.—Mr. George W. Mason, of Sharon, Pa., has patented a composition of matter to be used for making artificial stone, and consisting of pitch made from gas-tar, cement, plaster of Paris, lime, ground cinders, ground ore, ground oyster shells, fine ashes, pulverised dry clay, dry sawdust, ground slate, ground stone, sand and pebbles, and molton brimstone.

An *improved harvester guard finger* has been patented by Mr. Elisha S. Snyder, of Snyder's Mills, West Va. The invention consists in a sectional guard finger constructed with two reversible plates, each having two cutting edges, the plates being arranged to engage with the sickle knives, and held in position by a removable top section provided with beveled edges, which may be utilised by inserting a sickle having inverted knives.

Plough.—Mr. James H. Palm, of Lexington, O., has patented an improved device for raising and lowering the front end of a clevis pivoted to the forward end of a plough beam, whereby the plough can be made to plough deeper or shallower; it consists of a clevis having its opposite arms pivoted to a plough beam on each side near its forward end, and provided with a cross rod, to which a slotted tongue carrying a pin is hinged, the pin on the tongue engaging in a cam groove in a wheel provided with a crank shaft extending back parallel with the beam.

An *improvement in shovel plough blades* has been patented by Mr. Henry A. Ridley, of Newport, Ark. The object of this invention is to facilitate the enlargement and contraction of shovel-plough blades, as the character of the work to be done may require, and also to facilitate repairing the blades.

CEMENT FOR LEATHER.—One who has tried everything, says that after an experience of fifteen years he has found nothing to equal the following as a cement for leather belting:—Common glue and isinglass, equal parts, soaked for ten hours in just enough water to cover them. Bring gradually to a boiling heat and add pure tannin until the whole becomes ropy or appears like the white of eggs. Buff off the surfaces to be joined, apply this cement, and clamp firmly.

RECOVERY OF OLD VULCANISED CAOUTCHOUC.—The pieces are heated in contact with steam, when the sulphur is volatilised and the caoutchouc melts, and is collected as a liquid, used in preparing waterproof covers, &c.

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